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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,187	04/25/2001	Michael L. Nelson	1857.0350000	3650
26111	7590	08/11/2004	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			MATHEWS, ALAN A	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/841,187

Applicant(s)

NELSON ET AL.

Examiner

Alan A. Mathews

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10,12-14,19-28,30-40 and 49-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10,12-14,19-28,30-40 and 49-57 is/are allowed.
- 6) ☒ Claim(s) 58-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission (new arguments) filed on May 19, 2004, has been entered.

Specification

2. The disclosure is objected to because of the following informalities:

On page 8, the fourth line from the bottom, "projection optics 110" should apparently be "projection optics 102" to be consistent with previous designations of projection optics and to prevent inconsistency with the previous recitation "wafer 110".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 58-61 are rejected under 35 U.S.C. 102(b) as being anticipated by the article entitled “Advanced Focus System Development Task Proposal” (cited on Applicant’s PTO-1449 submitted May 20, 2003) and hereafter referred to as the Advanced Focus System article. On page 24 of the Advanced Focus System article, under “Stand-alone Measurement Station”, it states:

For purposes of illustration, consider a design in which the primary focus gauge array is duplicated, but in place of the exposure lens is an array of secondary gauges measuring the focus error at the exposure area. The sensor correction file values could be calculated by moving the wafer through a simulated exposure and recording the secondary gauge readings.

The components of the stand-alone measurement station would consist of a data recording computer, an embedded digital signal processing front end, an array of focus sensors that **contain both calibration type and control type sensors**, and software for control, data reduction and interface.

In operation a wafer would be loaded onto a wafer chuck and chuck would be moved by an X-Y stage in a pattern it simulates the exposure pattern that the lithography tool will use. The data acquisition system would record a set of readings on both the control and calibration sensors. **The software algorithms would in effect calculate the differences between the two sensors and assemble a table of errors in the way in which the control sensor detects the top surface of the wafer.** The error table would then be utilized in the aligner as a set of corrections to be made to the real-time focus control during the exposure process, making the control sensor pattern insensitive.

The secondary gauges (which is in place of the exposure lens) comprise the calibration sensor, which measures a focus distance to generate a first measurement. The primary focus gauge is the control sensor, which measures the focus distance to generate a second measurement. Storing calibration information would be the assembling of a table of errors. The last sentence in the last paragraph of the quote above discloses measuring the focus distance using the control sensor and correcting the measurement using the stored calibration information. With respect to claim 61, page 22 discloses use of an air gauge sensor.

Allowable Subject Matter

5. Claims 1-57 are allowed. The reasons for the indicated allowability of the claims are as follows:

The prior art of record does not disclose or suggest wherein the calibration sensor has a higher focus accuracy than each of the secondary control sensor and the primary control sensor in combination with all the other elements recited in each of independent claims 1, 31, 51, 52, 54, 55, and 57.

The prior art of record does not disclose or suggest wherein the first type of sensor has a higher focus accuracy than the second type of sensor in combination with all the other elements recited in independent claim 21.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan A. Mathews whose telephone number is (571) 272-2123. The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alan A. Mathews
Primary Examiner
Art Unit 2851

AM